The editors and authors have given us a splendid rendition of details, bringing together widely scattered information. Yet I missed the big picture. The editors should have shown how these case histories relate to global eustasy and regional epeirogency.

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Biography of Our Planet

Oasis in Space. Earth History from the Beginning. PRESTON CLOUD. Norton, New York, 1988. xviii, 508 pp., illus. $29.95. Commonwealth Book Fund Program.

Geologists are lucky people. They get to travel to all sorts of odd, beautiful spots, away from the urban miasma. They study that most wonderful, strange, and improbable of subjects, the earth. They can tell true tales of polar bears, hippos, and encounters with cannibals. They even get to go to committee meetings without wearing ties.

Preston Cloud is one of the luckiest of geologists: he saw the planet in the days before its ecological ruin; he has seen his discipline grow to a hard, if less amusing, science with a firm theory of the earth; he has seen innumerable rocks (the best geologist is often the one who has seen the most rocks) and much mud; and, mirabile dictu, he has had a chance to write it all down for us.

Oasis in Space is a paean to the glory of the earth. It is a fine exposition of the history of our planet, written in a chatty style that hides deep learning and wise judgment. The book is a biography of the planet, and it pays more than usual attention to the infancy, childhood, and youth of the earth. The first section recounts the beginnings of the planet and introduces the fundamental logical tools of geology, together with the concept of geological time. This is followed by an account of the next 3 billion years, or most of what is commonly (but not by Cloud) called the Precambrian. Woven into this history of the biosphere is a discussion of the more physical aspects of geology: plate tectonics, climatology, and so on. The final chapters recount the more familiar tale of a planet inhabited by metazoa: a biosphere dominated by plants and animals. Within this saga of trilobites, fish, dinosaurs, and humans, the author interleaves many other topics: mountain building and continental collision, evolution and extinction, oil and climate, forcing factors and the question whether a gale in a junkyard would ever assemble a B-29 bomber.

There is much meat in the book, and the material is eclectic and up-to-date; there is even mention of RNA enzymes, not normal matter for a geology text. There are many set-piece expositions of such varied subjects as the origin of ironstones and the history of the atmosphere, plate tectonics, the theory of evolution, and the nature of mass extinction. Throughout the book the argument is detailed and careful: there is little of the vacuity common in general geology texts. The book should appeal to hordes of students (though it may be too advanced for first-year students) and to scientists who are not geologists. It may even revitalize those professional earth scientists like myself who are so worn down by the interminable business of grant application and implementation that we forget the splendor of our home. Though one may disagree with some of Cloud's opinions and dispute some of his conclusions, this is a book worth reading well and well worth buying. And what a wonderful title!

Now, like most field geologists, I must end with a Cloud story and a moral. He visited us once, years ago, in the Zimbabwean bush. Our camp was by a pool occupied by bathing maidens at one end and a large hippo on a sandbank at the other. Cloud, being a geologist, went straight for the end with the hippo. Now large hippos are not safe—they kill many people, bite you in three, and stomp on the remains—but Preston was fearless. He advanced steadily onto the sandbank in his inexorable investigation of nature, while we watched, worried, and considered rescue. The hippo arose and angrily prepared to charge. Fortunately, at the very last moment it yielded and ran off with a great splash, and *Oasis in Space* could be written. The moral, inevitably, is that of Cloud's last chapter: mankind now rules the earth and nature is in retreat.

But hippos do not just sleep on sandbanks. Hippos have incongruously tiny tails, which do more than keep off flies. When a hippo defecates, which it does with great éclat, the co-evolutionary tail whirs around like a fan. The dung hits it, is spread far and wide, and nurtures the riverbank habitat. Here is the parting message of Cloud's book: when we remove the hippo we also leave the riverbank, the river, and the world much the worse. Our planet is in crisis. *Oasis in Space* is a summation of the insight gained by earth scientists in this century. Earth science has solved the problem of how the planet works in physical terms; our challenge now is to understand and manage the biosphere, our home, before it is destroyed.

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Sexual Reproduction

The Evolution of Sex. An Examination of Current Ideas. RICHARD E. MICHOD and BRUCE R. LEVIN, Eds. Sinauer, Sunderland, MA, 1987. x, 342 pp., illus. $55; paper, $29.95.

The near ubiquity of sexual reproduction has long attracted the attention of evolutionary biologists. Why should so many species engage in the complicated behavioral and physiological processes needed to bring together gametes from two distinct individuals, and possess the elaborate genetic machinery involved in producing recombination between the maternal and paternal genomes during the production of these gametes? It would seem much easier simply to engage in "some harmless mode of vegetation," as Edward Gibbon once put it. Since the development of the modern evolutionary synthesis in the 1930s and '40s, thinking about the evolutionary significance of sex and genetic recombination has been dominated by the idea that the long-term survival of the population or species is promoted by the ability of sexual reproduction to generate new combinations of alleles at different loci and thereby accelerate the rate of evolution. On this view, asexual taxa are more vulnerable to extinction in the face of a changing environment and so are poorly represented among extant species of higher plants and animals. During the past 15 years or so, this type of interpretation has come under increasing challenge, and considerable effort has been expended in developing models of selection on genes that modify the mode of reproduction or the frequency of genetic recombination, with the course of evolutionary change being determined by the changes in frequency of these genes within populations.

The early phases in the development of this viewpoint were reviewed by George Williams (*Sex and Evolution*, 1975) and John Maynard Smith (*The Evolution of Sex*, 1978). Since then, a number of significant further theoretical developments have occurred, and an ambitious attempt to test the earlier models against the evidence provided by the taxonomic distribution and ecological corre-